

## BATTERY CARE AND OPERATING INSTRUCTIONS

Motive Power batteries must only be handled by fully trained personnel who follow the manufacturer's recommendations carefully. Batteries can be hazardous when being handled, maintained or repaired, if the proper procedures (set out below) are not followed.

Remember – Your Industrial Battery and Charger Services Ltd service engineer is always available for advice.

### **HANDLING**

Motive Power batteries are heavy, so adequate mechanical handling systems must be used. Care must be taken to ensure that the sulphuric acid electrolyte is not spilled and the cells are not physically damaged.

### **Precautions**

- A. Keep the batteries upright when lifting. Holes into which lifting hooks should be located are provided in the battery tray. Alternatively the batteries should side out either on onto a battery roller bed or with the aid of forklift pockets under the tray.
- B. Ensure the battery is located in the correct position on the vehicle and secure any restraining devices.

### **ACID (ELECTROLYTE)**

Lead-acid batteries contain dilute sulphuric acid electrolyte which is poisonous and corrosive. It will cause burns or irritation if it comes into contact with the skin or eyes.

### **Precautions**

- A. When working on batteries, always wear the appropriate protective clothing and goggles.
- B. Handle batteries carefully and always keep them upright.
- C. Top-up battery cells only to the correct level, as recommended by the manufacturer (see Page )
- D. Locate eye wash stations in vicinity of charging area.

### **Emergencies**

If acid is spilled on the floor, neutralize as quickly as possible, using an alkali such as soda ash, sodium carbonate, sodium bicarbonate, or dilute ammonia.

If acid is spilled on clothing, wash as soon as possible.

If acid comes into contact with skin, wash off immediately with plenty of clean water

If acid splashes into eyes, immediately flood the eye with copious quantities of water, obtain medical attention at once.

**EXPLOSIONS**

When a lead-acid battery is on charge, gases are evolved which can form an explosive mixture.

**Precautions**

- A. To avoid the risk of igniting these gases and causing an explosion, keep sparks, flames, lighted cigarettes and pipes away from batteries.
- B. Switch off charger before connecting or disconnecting the battery.
- C. Ensure connections are secure before switching on.
- D. Areas where batteries are kept or charged must be adequately ventilated. Contact Industrial Battery and Charger Services Ltd if advice is required.

**ELECTRICAL ENERGY**

A battery can be short-circuited by simultaneously touching two or more of the cell terminals or inter-cell connectors with a metal tools or other object capable of conducting electricity. If this happens, the conductive object will:-

- A. Become hot and cause burns  
  
and / or
- B. Eject molten lead and sparks which could ignite any hydrogen present, resulting in an explosion.

**Precautions**

- A. Before working with a battery, remove any metallic personal effects such as rings, watches, bracelets, necklaces etc. Remove anything which may fall from the pockets of clothing.
- B. Always use insulated tools. Spanners used must be of the single ended type only.
- C. Do not place tools or any other objects capable of conducting electricity or battery tops.
- D. Always wear eye protection.
- E. Ensure the electrical circuit is safe before making a connection to the battery.
- F. Do not use metal vessels or jugs to store or dispense water or acid.

## **PREPARING THE BATTERY FOR SERVICE**

### **A. Unpacking**

Keep the tray upright. If rope or chain slings are used keep slings vertical. Clean off the packing material from the cells and trays. Examine carefully to see if there has been any damage in transit.

It is important that any damage be reported to the carrier, and the Company notified that this has been done.

### **B. Preparing the Cells**

Batteries can be put into service immediately, providing the specific gravities\* are above 1.250.

If the specific gravities are below 1.250, the battery should be given a charge.

If the battery is not required immediately for service, it should be stored on open circuit and given a charge at monthly intervals. The cells should be topped up when necessary before the charge.

### **C. Fitting on the vehicle**

Wipe the top of the battery clean and dry. All bolted connections to battery terminals should be smeared with petroleum jelly. Connecting cables should be well anchored and sufficiently long to prevent pulling on the battery terminals. The cells must be accessible to facilitate testing and topping up.

## **OPERATION**

### **General**

It is recommended that the battery is not discharged beyond 80% of normal capacity. When the battery has been deeply discharged it should be recharged as soon as possible.

During a charge, open the battery compartment to get additional ventilation.

\*all specific gravities quoted relate to temperature of 30 degrees C

Leave the vent plugs firmly in position.

When recharging the battery avoid the gassing at high currents, and high acid temperatures. The maximum recommended temperature is 43 degree C.

## MAINTENANCE

### CARE OF BATTERY IN SERVICE

- A. Keep the top of the battery tops and containers dry and clean to prevent electrical leakage between cells. Should there be any corrosion of the metalwork, remove the products of corrosion and neutralise any remaining acid with a solution of water and sodium bicarbonate or with dilute ammonia. Protect from further corrosion by covering with acid proof paint.
- B. Lifting facilities on battery trays should be examined periodically for corrosion or other deterioration. Do not lift damaged trays as there is a danger of collapse. When fitting the battery on the vehicle, it should be secured in position by any locking devices provided. If the battery is in two units these should be kept together when charging.
- C. If excessive corrosion or other deterioration becomes evident in any part of the battery, it should be reported to Industrial Battery and Charger Services Ltd.
- D. Check bolted connections on the battery for tightness and ensure that they are clean.
- E. Inspect battery cable insulation and battery charging connectors for wear and damage to insulation and burning contacts. Refurbish or replace as necessary.
- F. Keep all inter-cell and terminal connectors smeared with petroleum jelly.
- G. Ensure that the insulating shrouds, if any, are in position on cell connectors.
- H. **Topping up Cells**  
**Add nothing to the cells but distilled, deionised or approved water – contact Industrial Battery & Charger Services if in doubt. Top up often enough to keep the visible components just covered (electrolyte visible). Do this before charge so that the water and acid are thoroughly mixed whilst cells are gassing.**
- I. Never add acid to compensate for spilling.( for advice contact Industrial Battery & Charger Services Ltd.)
- J. Keep vent plugs closed and connections tight.
- K. Remove or open vent plugs only when topping-up and taking specific gravity readings.

### CARE OF BATTERY OUT OF SERVICE

- A. If a battery is to be taken out of service for a time, or if a new charged battery cannot be put into service immediately, it should be stored in a cool dry place.
- B. Disconnect detachable connectors.
- C. Every week check the acid levels and give a charge.
- D. If a vehicle is used at irregular intervals the battery should be given a charge every month and the battery disconnect from the vehicle during its idle periods. Before putting back into service, check the levels and give a charge.